

WHAT IS CLAIMED IS:

1. A halftone cell of a threshold array halftone screen, comprising:
a plurality of pixels arranged into at least one row of pixels, each pixel having a first dimension along a high-addressability direction and a second dimension along a low-addressability direction; and
a plurality of high-addressability pixels defined in each of the plurality of pixels, each high-addressability pixel having a third dimension along the high-addressability direction and the second dimension along the low-addressability direction, where the ratio between the first and third dimensions defines a high-addressability factor;
wherein:
each high-addressability pixel is divided along the low-addressability direction to define a plurality of subcells of the pixels of the halftone cell, each subcell having a threshold value, the plurality of subcells of each of the at least one row of the halftone cell arranged into a plurality of subrows; and
each of the plurality of subrows is selectable as the set of threshold values for the high-addressability pixels of the halftone cell to at least effectively shift the halftone cell along the low-addressability direction by an amount corresponding to the selected one of the plurality of subrows.
2. The halftone cell of claim 1, wherein the threshold values are distributed between the subrows according to a predefined pattern.
3. The halftone cell of claim 2, wherein the threshold values are distributed in the predefined pattern between the subrows to interpolate between the different threshold values.
4. The halftone cell of claim 3, wherein selecting a different one of the subrows provides a different interpolation between the threshold values.
5. The halftone cell of claim 2, wherein the predefined pattern into which the threshold values are distributed is one of a dither pattern, a triangular pattern and a sawtooth pattern.
6. The halftone cell of claim 1, wherein the subcells within a given pixel of the halftone cell have a limited number of different threshold values.

7. The halftone cell of claim 6, wherein the limited number of different threshold values within a given pixel is two.

8. The halftone cell of claim 7, wherein the two different threshold values are distributed between the subrows according to a predefined pattern.

9. The halftone cell of claim 8, wherein the predefined pattern into which the two different threshold values are distributed is one of a dither pattern, a triangular pattern and a sawtooth pattern.

10. A halftone screen comprising a plurality of the halftone cells of claim 1.

11. A method for converting a color separation layer of a continuous tone image into a threshold-array halftoned binary color separation layer, comprising:

determining, for at least one portion of the color separation layer, a shift amount along a low-addressability direction;

applying a threshold array halftone screen to the one color separation layer, the threshold array halftone screen comprising a plurality of halftone cells, each halftone cell comprising:

a plurality of pixels arranged into at least one row of pixels, each pixel having a first dimension along a high-addressability direction and a second dimension along the low-addressability direction, and

a plurality of high-addressability pixels defined in each of the plurality of pixels, each high-addressability pixel having a third dimension along the high-addressability direction and the second dimension along the low-addressability direction, where the ratio between the first and third dimensions defines a high-addressability factor, wherein each high-addressability pixel is divided along the low-addressability direction to define a plurality of subcells of the pixels of the halftone cell, each subcell having a threshold value, the plurality of subcells of each of the at least one row of the halftone cell arranged into a plurality of subrows;

selecting, for each of at least one of the at least one portion of the color separation layer for which a shift amount has been determined, one of the plurality of subrows of the halftone cell corresponding to that portion of the color separation layer based on the determined shift amount; and

threshold array halftoning that portion of the color separation layer based on the threshold values within the selected subrow of the corresponding halftone cell.

12. The method of claim 11, further comprising:

outputting the threshold array halftoned color separation layer including each portion of the color separation layer that was threshold array halftoned based on the threshold values within the selected subrow of the corresponding halftone cell to an image forming device, the image forming device having a high-addressability direction and the low-addressability direction;

operating the image forming device based on the threshold array halftoned color separation layer such that each portion of the color separation layer that was threshold array halftoned based on the threshold values within the selected subrow of the corresponding halftone cell is shifted by the determined shift amount in the low-addressability direction.

13. A method for shifting at least a portion of a color separation layer of a continuous tone image along a low-addressability direction, comprising:

determining, for the portion of the color separation layer, a shift amount along a low-addressability direction;

applying a threshold array halftone screen to the one color separation layer, the threshold array halftone screen comprising a plurality of halftone cells, each halftone cell comprising:

a plurality of pixels arranged into at least one row of pixels, each pixel having a first dimension along a high-addressability direction and a second dimension along the low-addressability direction, and

a plurality of high-addressability pixels defined in each of the plurality of pixels, each high-addressability pixel having a third dimension along the high-addressability direction and the second dimension along the low-addressability direction, where the ratio between the first and third dimensions defines a high-addressability factor, wherein each high-addressability pixel is divided along the low-addressability direction to define a plurality of subcells of the pixels of the halftone cell, each subcell having a threshold value, the plurality of subcells of each of the at least one row of the halftone cell arranged into a plurality of subrows;

selecting, for each of at least one of the at least one portion of the color separation layer for which a shift amount has been determined, one of the plurality of subrows of the halftone cell corresponding to that portion of the color separation layer based on the determined shift amount; and

threshold array halftoning the portion of the color separation layer based on the threshold values within the selected subrow of the corresponding halftone cell to shift the portion of the color separation layer along the low-addressability direction.

14. The method of claim 13, further comprising:

outputting the threshold array halftoned color separation layer including the portion of the color separation layer that was threshold array halftoned based on the threshold values within the selected subrow of the corresponding halftone cell to an image forming device, the image forming device having a high-addressability direction and the low-addressability direction;

operating the image forming device based on the threshold array halftoned color separation layer such that the portion of the color separation layer that was threshold array halftoned based on the threshold values within the selected subrow of the corresponding halftone cell is shifted by the determined shift amount in the low-addressability direction.

15. A method for converting a continuous tone image into a threshold-array halftoned binary image, comprising:

inputting the continuous tone image comprising at least one color separation layer;

determining, for at least one portion of at least one of the color separation layer, a shift amount along a low-addressability direction;

applying a threshold array halftone screen to each of the at least one color separation layer, the threshold array halftone screen comprising a plurality of halftone cells, each halftone cell comprising:

a plurality of pixels arranged into at least one row of pixels, each pixel having a first dimension along a high-addressability direction and a second dimension along the low-addressability direction, and

a plurality of high-addressability pixels defined in each of the plurality of pixels, each high-addressability pixel having a third dimension along the high-addressability direction and the second dimension along the low-addressability direction, where the ratio between the first and third dimensions defines a high-addressability factor, wherein each high-addressability pixel is divided along the low-addressability direction to define a plurality of subcells of the pixels of the halftone cell, each subcell having a threshold value, the plurality of subcells of each of the at least one row of the halftone cell arranged into a plurality of subrows;

selecting, for each of at least one of the at least one color separation layer, for each of at least one of the at least one portion of that color separation layer for which a shift amount has been determined, one of the plurality of subrows of the halftone cell corresponding to that portion of that color separation layer based on the determined shift amount; and

threshold array halftoning that portion of that color separation layer based on the threshold values within the selected subrow of the corresponding halftone cell.

16. The method of claim 15, further comprising:

outputting the at least one halftoned color separation layer including the at least one portion of the at least one color separation layer that was threshold array halftoned based on the threshold values within the selected subrow of the corresponding halftone cell to an image forming device, the image forming device having a high-addressability direction and the low-addressability direction;

operating the image forming device based on the at least one threshold array halftoned color separation layer such that each at least one portion that was threshold array halftoned based on the threshold values within the selected subrow of the corresponding halftone cell is shifted by the determined shift amount in the low-addressability direction.

17. A method for printing a continuous tone image, comprising:

inputting the continuous tone image, the continuous tone image comprising at least one color separation layer;

generating a first threshold array halftoned color separation layer from a first one of the color separation layers of the continuous tone image;

controlling an image forming device based on the first threshold array halftoned color separation layer to form a first output image;

determining, for each of at least one portion of the first output image, a shift amount along a low-addressability direction for that portion;

applying a threshold array halftone screen to a second color separation layer of the continuous tone, the threshold array halftone screen comprising a plurality of halftone cells, each halftone cell comprising:

a plurality of pixels arranged into at least one row of pixels, each pixel having a first dimension along a high-addressability direction and a second dimension along the low-addressability direction, and

a plurality of high-addressability pixels defined in each of the plurality of pixels, each high-addressability pixel having a third dimension along the high-addressability direction and the second dimension along the low-addressability direction, where the ratio between the first and third dimensions defines a high-addressability factor, wherein each high-addressability pixel is divided along the low-addressability direction to define a plurality of subcells of the pixels of the halftone cell, each subcell having a threshold value, the plurality of subcells of each of the at least one row of the halftone cell arranged into a plurality of subrows;

selecting, for each of at least one portion of the second color separation layer, each portion of the second color separation portion corresponding to a portion of the first output image for which a shift amount has been determined, one of the plurality of subrows of the halftone cell corresponding to that portion of the second color separation layer based on the determined shift amount;

threshold array halftoning the second color separation layer, wherein each portion of the second color separation layer corresponding to a portion of the first output image for which a shift amount has been determined is threshold array halftoned based on the threshold values within the selected subrow; and

controlling an image-forming device based on the threshold array halftoned second color separation layer to form a second output image.